

Parasitic varroa mites attached to a sticky board removed from the bottom of a beehive.

Screening Mites From Honey Bees

Battling the varroa mite has become a sticky job—literally. Entomologist Jeff Pettis, who is with the ARS Bee Research Laboratory in Beltsville, Maryland, has been looking for a way to snag mites that have been threatening honey bees for years. Through his experiments with sticky paper, a nonchemical control method evolved.

The mites, which attach to and feed on bees, can become dislodged through the bee's self-grooming or from smoke and chemical treatments applied by beekeepers. Pettis used sticky paper at the bottom of bee colonies to collect the dislodged mites for experiments.

"We noticed that many of the mites on the sticky paper were still alive and that they could easily reattach as the bees reentered the colony and walked across the bottom board," said Pettis. As a result, he created something called the Beltsville screen insert to help control the mite population.

The screen insert works by creating a 1- to 2-inch gap between the bottom board and the hive bottom. The insert's wire mesh allows the mites to fall through the screen and onto the hive bottom so they can't reattach to the bee. Monthly samples of the fallen varroa showed that the screen insert reduced the mite populations by about 15 percent. Though not sufficient alone, the Beltsville screen insert can contribute to integrated pest management practices.

Honey bees produce \$270 million worth of honey, beeswax, and other hive products and pollinate nearly \$10 billion worth of crops annually. So their conservation is of national and international importance. Improved varroa mite control will be valuable to people involved in the U.S. beekeeping industry,

including hobbyist and commercial beekeepers who rent their colonies for pollination services.

Researchers are continually developing and improving the screen, but it's already being advertised for sale.

"It's wonderful to be working with Beltsville scientists in selling a product that keeps us from having to rely totally on chemicals," says Steve Forrest of Brushy Mountain, a beekeeping supply company in Movarian Falls, North Carolina. Forrest says the screen is selling very well and hasn't generated any returns or complaints from beekeepers.

Varroa mite infestations have become such a serious problem that maintaining bee colonies without chemical treatment is virtually impossible. Currently, the only pesticide approved for use as a parasitic mite control for honey bees is Apistan—a strip that contains the chemical tau-fluvalinate. Varroa, however, have begun to show resistance to the chemical, so scientists are looking for alternatives such as the screen.

As safe and effective chemical controls continue to be researched and developed, the screen insert will complement Apistan in assisting beekeepers with the control of invading varroa.—By **Sarah Tarshis, ARS.**

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Entomologist Jeff Pettis examines a screen that separates live varroa mites from bees, thus reducing mite levels in honey bee colonies.